

### **REMARKS**

The present application had claims 17-32 pending. Claims 17, 26-29 and 32 have been amended hereinabove and claims 19, 21 and 23-25 have been cancelled. Claims 17, 18, 20, 22, and 26-32 are now pending in the subject application.

Support for the amendment of claim 17 may be found in previously-pending claims 19 and 21 and in the specification on page 10, lines 21-24 of the English translation. The cited section of the specification also supports the amendment of claim 29. The remaining amendments are minor in nature – mostly directed to correction of claim dependency. No new matter is introduced to the application by the present amendments.

In the April 19, 2010 Office Action, the Examiner indicates that Applicants did not submit drawings when filing their U.S. application. Applicants believe this statement is incorrect. The present application is a national stage filing under 35 USC §371 of PCT/EP2004/007802. As such, Applicants' submission on January 13, 2006 constitutes their U.S. filing – i.e., the submission of the cited PCT application. Since this submission included the drawings, Applicants' U.S. filing included drawings.

On June 21, 2007, Applicants submitted their oath/declaration of inventorship, together with an English translation of the specification of the PCT application. Drawings were not included with this submission because Applicants did not believe that the drawings needed a translation. Applicants did not intend for their submission of a translation to be construed as a new filing or substitute filing of their U.S. application. As indicated in the submission's accompanying communication, the submission was only intended as an English translation of the already submitted PCT specification.

Nevertheless, if a replacement sheet of drawings is needed, Applicants have enclosed herewith a replacement sheet containing Figures 1 and 2, wherein the PCT applications markings have been removed and the term "Figur" has been changed to "Figure".

The Examiner, in the April 19<sup>th</sup> Office Action, also rejects claims 17-21, 23-25, and 27-32 under 35 USC §102 as allegedly anticipated by Nanaumi, *et al.* (US Patent Publication No. 2003/0049518). Additionally, the Examiner rejects claims 22 and 26 under 35 USC §103(a) as allegedly unpatentable over Nanaumi in combination with secondary reference Lloyd, *et al.* (US Patent Publication No. 2004/0086775).

Applicants disagree with the Examiner's position, but nevertheless have added additional limitations to independent claim 17 to further distinguish the claimed invention from the cited references. Specifically, claim 17 now requires that the ion-conducting membrane has a free surface which is not supported by a gas diffusion layer on the front side and that the margin of the gas diffusion layers and the free surface of the ion-conducting membrane are surrounded by a sealing material which penetrates into the peripheral region of the membrane-electrode assembly to a depth of at least 1mm.

Neither Nanaumi nor Lloyd discloses or suggests the added features in amended claim 17. The seal members 90 and 92 of Nanaumi do not penetrate the peripheral region of the MEA. Rather, they are of circular shape and are compressed in the fuel cell assembly (see Nanaumi, page 6, left column para. 60 and 61). Also the "seal members" disclosed in Nanaumi are of different materials, which do not penetrate the membrane-electrode assembly. As can be seen in Figures 6 and 7 of Nanaumi, the seal members are items with "circular cross section" that can be compressed to oval shape (see Nanaumi, page 6, sections 60 and 61).

Nanaumi also teaches frame-shaped seal members. In these cases, the seal members are made of different materials than that of the seals of the present invention. In addition, the frame-shaped seal members of Nanaumi do not penetrate the peripheral region of the MEA to the depth now specified in amended claim 17. Thus, Nanaumi basically leads the skilled artisan away from the present invention.

The Lloyd reference refers to metalized GDLs, and does not disclose, teach or suggest the claim elements missing from the teachings of Nanaumi, including *inter alia* the element requiring that the seal material penetrates into the peripheral region of the membrane-electrode assembly to a depth of at least 1mm.

The present invention provides electrolysis MEAs with improved pressure stability and improved gas tightness (see, for example, the English translation of the present specification, page 5, lines 14-18). In this regard, the required penetration depth of at least 1mm is important for pressure stability (see *Id.*, page 10, lines 21-25). When applying a minimum penetration depth of at least 1 mm in combination with the free membrane surface (i.e., not supported by a gas diffusion layer), surprisingly good results in the final electrolysis MEA are obtained in terms of pressure stability (see *Id.*, page 7, lines 8-12).

In sum, a skilled artisan in the art field would not arrive at the presently claimed invention based on the teachings of Nanaumi and Lloyd or any combination thereof. There is no teaching or suggestion in either of the cited references (or in their combination) which would motivate or guide an artisan to manufacture a membrane-electrode assembly wherein the first gas diffusion layer has smaller planar dimensions than the ion-conducting membrane and the second gas diffusion layer has essentially the same planar dimensions as the ion-conducting membrane, and wherein the ion-conducting membrane has a free surface which is not supported by a gas diffusion layer on the front side and wherein the margin of the gas diffusion layers and the free surface

of the ion-conducting membrane are surrounded by a sealing material which penetrates into the peripheral region of the membrane-electrode assembly to a depth of at least 1mm.

The remaining pending claims all dependent from, and contain all the limitations of, claim 17, and thus are patentable over Nanaumi and Lloyd for the same reasons as outlined above for claim 17.

Applicants also wish to point out to the Examiner that the present application is a continuation-in-part application of U.S. Serial No. 10/699,158 and, in addition, the application is related to U.S. Serial No. 10/564,794, which ultimately claims priority to the same foreign priority document – German application No. 103 31 836.4, filed July 14, 2003.

Lastly, Applicants wish to inform the Examiner that the corresponding European application (EP 04741011.3) has been granted with substantially the same claim set as now pending in the present application.

In light of the amendments and remarks above, Applicants request reconsideration and withdrawal of the rejections under 35 U.S.C. §§102 and 103(a) set forth in the April 19, 2010 Office Action and respectfully solicit allowance of the present application.

No fee is deemed due for this amendment, other than the fee for the requested one-month extension of time. If any additional fees are due, or an overpayment has been made, please charge, or credit, our Deposit Account No. 11-0171 for such sum.

Applicant: Zuber, et al.  
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If the Examiner has any questions regarding the present application, the Examiner is cordially invited to contact Applicants' attorney at the telephone number provided below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "John J. Santalone", written over a horizontal line.

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